



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/882,138	06/15/2001	Joseph P. Donahue	45223/TJD/O125	9249

7590 07/12/2005
Carmody & Torrance
50 Leavenworthy Street
P.O.Box 1110
Waterbury, CO 06721-1110

EXAMINER

AMINI, JAVID A

ART UNIT PAPER NUMBER

2672

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/882,138

Applicant(s)

DONAHUE ET AL.

Examiner

Javid A. Amini

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-10 and 12-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date 7/6/2005.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Amendment

Applicant's arguments with respect to claims 1, 3-4, 6-10, 12-37 have been considered but are moot in view of the new ground(s) of rejection.

The content of the Interview summary dated 7/6/2005, Examiner agreed to issue another non-final office action, because the claim languages in claim 1 need remodifying in order to present better understanding of the invention, e.g. lines 3-5, in claim1 claims first and second regions. It appears the first and second regions are similar to each other, because Applicant claims line 7, claim 1 that the buffer region is associated with both image segments, but in claim1, lines 12 and 19 modifying the first and second segments separatel, which means they are different buffer regions. Examiner requested Applicant to clarify the following claim language "moving at least one of the printing device and the photosensitive coated subdtrate" see line 14. Applicant referred Examiner to page 5, lines 8-17, but the mentioned page does not explicitly specify moving a device or a substrate. Applicant interpreted the term "moving" as equivalent to "indexed" see page 5 line 14. Examiner's suggestion: Applicant can use the term "indexing" in lieu of using the term "moving". Examiner belives that lines 19 and 12 should go before the step of printing, line 16 and 9 respectively, of claim 1.

Applicant on page 8 refers Examiner to page 14, line 6 of the specification for the concept of full scale.

Examiner's reply: on page 14, line 6 discloses "1 (full scale)", therefore Examiner encounters that the limitations are between 0-1, zero indicates as a minimum value and one indicates as a maximum value (i.e. full scale).

Art Unit: 2672

Applicant on page 8, last paragraph indicates the phenomenon of modulation of an electromagnetic wave by an acoustic wave is clearly explained on page 9, line 20, thru page 13, line 6. Applicant argues the specification is sufficient to demonstrate to one skilled in the art how the modulators are used in the practice of the invention.

Examiner's reply: The reasons Examiner requested Applicant to provide more information about the phenomenon of modulation of an electromagnetic wave by an acoustic wave, is as follows:

What are the significant of modulation of an electromagnetic wave by an acoustic wave in claims 12, 24-27 and 33? The referred pages by Applicant do not assist Examiner to see the significant of modulation of an electromagnetic wave by an acoustic wave.

Applicant on page 9 last paragraph argues that the reference Takiguchi do not teach photosensitive coated substrate.

Examiner's reply: Applicant on page 4, lines 31-33, discloses that exposed object typically photosensitive surface such a printing plate, a xerographic drum, silver-film, or other photosensitive coated substrate.

Applicant on page 10, first paragraph argues the reference Komiya does not cure the deficiencies of Takiguchi because Komiya is also directed to processing images from electronic cameras.

Examiner's reply: Applicant does not claim the source of the images.

Applicant on the same page second paragraph argues that the boundaries of the first/second images, and the first/second areas of the photosensitive substrate are readily ascertainable by one skill in the art.

Art Unit: 2672

Examiner's reply: How does one skill in the art assume knowledge of image sizes, e.g. does the invention combine two images (1x1 inches) to make one larger image (1x2 inches)? Or the invention has limitations to start with images at least e.g. 50 inches wide to 100 inches wide.

Applicant on page 10 third paragraph argues the step of moving the printing device is clearly set forth in the specification at page 5, lines 8-29. *Id.*

Examiner's reply: Examiner can find no disclosure about moving a printing device.

Applicant on page 11, first paragraph argues that the reference Komiya does not teach the first ramp rate and the recording ramp rate are opposite each other.

Examiner's reply: Komiya in fig. 39 illustrates p1 and p2 are opposite each other.

Applicant on page 11, forth paragraph argues the claim language of claims 6-11 are not obvious because the references do not teach the claim limitations.

Examiner's reply: Could Applicant specify any other option besides using an amplitude of a signal to modify the pixels in the buffer? The term "the amplitude" in claim 6 has been defined.

Applicant on page 11 last paragraph repeated similar arguments as previously.

Applicant on page 12, second paragraph argues about claim 13.

Examiner's reply: Takiguchi in fig. 40 illustrates these steps. A user has selected a printer (S3601). If a printer has been selected, a check is performed to determine whether or not the selected printer is a binary-value printer (S3602).

Applicant on page 12, third paragraph argues the reference does not teach the limitations in claims 14-18.

Art Unit: 2672

Examiner's reply: As previously Examiner pointed out to abstract of the reference, and it's obvious a printer contained a rotating polygon i.e. drum. All drums are coated substrate (layer of a structure such as surface of a drum).

Applicant on page 12, last paragraph argues the reference Komiya does not teach the limitations in the claim 29.

Examiner's reply: The references do not explicitly specify the claim language, but it's obvious to interpret the paragraph 0152 of Komiya, (i.e. the displacement-detecting section 4 detects the positional relation between one of the pixels of either CMD (Charge Modulation Devices) and the corresponding pixel of the screen of the display section 31, from the image signal read from the image-storing section 3 and representing the overlap regions d of the two image parts shown in FIG. 5A, wherein the black dots indicate the pixels of the CMDs and the white dots indicates the pixels of the display screen. More specifically, the section 4 performs correlation on the value of each CMD pixel, thereby calculating two conversion factors, i.e., rotation angle R and displacement S.) into a fraction or ratio with 100 as the denominator.

Applicant on page 13, second paragraph argues none of the references teach the modulation of the individual pixels.

Examiner's reply: As Applicant defines "Modulation" as the variation of a property of an electromagnetic wave or signal, such as its amplitude, frequency, or phase (see page 13, first paragraph of remarks). Takiguchi in figs. 23 and 24 are graphs showing the luminance histogram employed for determining whether an image consists mainly of characters or is a natural image. As is shown in these graphs, the histogram is roughly divided into three portions

Art Unit: 2672

along the axis of the luminance, and total frequencies b1, b2 and b3 for individual ranges a1, a2 and a3 are calculated.

Applicant on page 13, regarding claim 30 argues the reference Komiya does not calculate the intensity of the pixels.

Examiner's reply: Komiya in paragraph 0472 the circuits 508r and 508b interpolate each red-pixel signal and each blue-pixel signal, which correspond to one green-pixel signal

Applicant on page 13, last two paragraphs argues similar to the previous arguments.

Applicant on page 14, first paragraph argues the Examiner has not pointed to any teaching in either reference to support this assertion.

Examiner's reply: A list of well-known modulation techniques: Phase modulation (PM) is the encoding of information into a carrier wave by variation of its phase in accordance with an input signal. Note that phase modulation can be regarded as a special case of frequency modulation where the carrier frequency modulation is the time derivative of the PM modulating signal.

Phase modulation can also be regarded as a special case of quadrature amplitude modulation.

➤ ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12, 24-27 and 33 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 2672

Applicant in claims 12, 24-27, 33 discloses the amplitude of the beam is modified by acoustic modulation. Applicant should explicitly specify what would be the phenomenon of modulation of an electromagnetic wave by an acoustic wave. Does Applicant calculate the noise?

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-18 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The following claim language "moving at least one of the printing device and the photosensitive coated substrate" see line 14. Applicant referred Examiner to page 5, lines 8-17, but the mentioned page does not explicitly specify moving a device or a substrate. Applicant interpreted the term "moving" as equivalent to "indexed" see page 5 line 14. Examiner's suggestion: Applicant can use the term "indexing" in lieu of using the term "moving".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-37 rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi et al. (hereinafter referred as Takiguchi) and further in view of Komiya et al. (hereinafter referred as Komiya).

1. Claims 1, 19, 22, 28.

Takiguchi in fig. 1B illustrates the step of “A method for combining at least two adjacent image segments to form a larger composite image comprising”. Takiguchi in figs. 22 and 33 steps s2203-s2206 teaches the step of “establishing a first region of a photosensitive coated substrate in which a first image segment will be printed; establishing a second region of the photosensitive coated substrate in which a second image segment will be printed; defining a buffer region comprising a plurality of pixels associated with both image segments;” Takiguchi in col. 26 lines 35-42 teaches the step of “printing, with a printing device, the first image segment and the buffer region associated with the first image segment onto a first area of the photosensitive coated substrate;” Examiner’s comment: it is obvious for printing with a printing device, and the image data are stored in the buffer region before transferring to the printing device. The printing device could be an ink jet, laser and dot matrix. Applicant should explicitly specify the boundaries (sizes) of the first image segment and the first area of the photosensitive-coated substrate, for example: a drum. Takiguchi in figs. 1A and 1B illustrates synthesization ratio that covers the step of “modifying the intensity of the pixels in the buffer region associated with the first image segment by a first ramp value”. The following step is not clear, why the printing device or the printer should be moving to a different location in order to print a second area of photosensitive-coated substrate. “moving at least one of the printing device and the photosensitive coated substrate relative to one another to print a second area of the

Art Unit: 2672

photosensitive coated substrate". The following steps hypothetically similar to the pervious steps of printing the first image onto the first area "printing, with the printing device, the second image segment, including the buffer region associated with the second image segment onto the second area of the photosensitive coated substrate; and modifying the intensity in the buffer region associated with the second image segment by a second ramp value; whereby the first image segment and the second image segment are substantially overlapped in the buffer region". Takiguchi's invention relates to an image synthesization method for synthesizing a plurality of images (for example: two images), in which the image areas partially overlap each other (similar to the Applicant's invention in fig. 2 overlapped buffer region), in order to create a single synthetic image. But does not explicitly specify a unique stitching method by creating a first buffer region in a first image segment in which the intensity of the pixels in the first buffer region is attenuated, a buffer region in a second image segment in which the intensity of the pixels in the second buffer region is attenuated, and then overlapping the buffer regions of the two image segments. However, Komiya's invention relates to an image processing apparatus for forming either images of the parts of an object or images of an object, which are identical but different in color, and for combining the images into a wide high-resolution image of the object. Komiya in paragraph 0167 teaches the displacement-detecting circuit 24 comprises correlators' 24a and 24b and a coefficient calculator 24c. The correlators' 24a and 24b receive the image signals read from the frame memories 22 and 23 (similar to Applicant's buffer region), respectively, and perform correlation on the input image signals. The image signals, thus processed, are input to the coefficient calculator 24c. The calculator 24c detects the displacement of the overlap regions of the CMD imaging areas, i.e., the conversion factors R

Art Unit: 2672

and S (similar to ramp value of Applicant's invention in fig. 2). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Komiya into Takiguchi in order to accomplish a low-cost color image processing apparatus which can form a high-resolution color image, even if its imaging devices are not positioned with high precision. Also incorporating an option of Takiguchi that a user can designate a matching point by carefully monitoring only a portion where image overlapping is performed. A user does not have to compare two images to designate a matching point, and the load imposed on a user can be reduced.

2. Claims 3, 20.

A method according to claim 1 wherein the first ramp value and the second ramp value are opposite one another. Komiya in fig. 39 illustrates p1 and p2.

3. Claims 4, 21.

A method according to claim 1 wherein the intensity of the pixels in the buffer region sums to substantially full scale. Komiya in paragraph 0152 indicates the number of pixels.

4. Claims 6-10.

wherein intensity of the pixels in the buffer region is modified by modulating amplitude of a beam of electromagnetic radiation capable of exposing the photosensitive coated substrate. The step is obvious, because of the conversion between the intensity and the amplitude of a beam.

5. Claims 12, 24-27, 33.

A method according to claim 6 wherein the amplitude of the beam is modified by acoustic modulation. Applicant should explicitly specify what would be the phenomenon of modulation

Art Unit: 2672

of an electromagnetic wave by an acoustic wave. Does Applicant calculate the noise? Komiya in paragraph 0162 teaches about fixed Pattern Noises.

6. Claim 13.

A method according to claim 1 wherein the printing of the first and second image segments is achieved through a process selected from the group consisting of scanning a photosensitive coated substrate by a rotating polygon, rotating single facet mirror or rotating holographic scanner illuminated by the exposing radiation source. Takiguchi in fig. 40 illustrates these steps. A user has selected a printer (S3601). If a printer has been selected, a check is performed to determine whether or not the selected printer is a binary-value printer (S3602).

7. Claims 14-18.

A method according to claim 1 wherein the printing of the first and second image segments is achieved through having a photosensitive coated substrate exposed by a fixed pattern array of individually segmented light sources. See Takiguchi 's abstract.

8. Claim 29.

A printing system according to claim 28 wherein the ramp rate is defined as the percentage of modulation per in-scan pixel. See Takiguchi's fig. 45 step s11. Also see Komiya in paragraph 0006.

9. Claim 30.

A printing system according to claim 28 wherein the intensity value is computed from the ramp rate and the initial value by an integrator. Komiya in paragraph 0472 the circuits 508r and 508b interpolate each red-pixel signal and each blue-pixel signal, which correspond to one green-pixel signal

Art Unit: 2672

10. Claim 31.

A printing system according to claim 28 wherein the intensity value and digital pixel data are converted into analog data by a multiplier. Komiya in fig. 58 steps 144-146 and 137-139 covers the steps of this claim.

11. Claims 32 and 23.

A printing system according to claim 28 wherein a means for modulating intensity is amplitude modulation. Komiya in fig. 67 step 209.

12. Claim 34.

A printing system according to claim 28 wherein the means for modulating intensity is phase modulation. It is obvious because, it is a technique to transmit information using a sine wave carrier. The sine wave has its phase changed in accordance with the information to be transmitted.

13. Claim 35.

A printing system according to claim 28 wherein the means for modulating intensity is frequency modulation. It is obvious because, it is a form of modulation in which the frequency of the modulated carrier wave is varied in proportion to the amplitude of the modulating wave. In this case the phase of the carrier varies with the integral of the modulating wave

14. Claim 36.

A printing system according to claim 28 wherein the means for modulating intensity is code domain modulation. See rejection of claims 34-35.

15. Claim 37.

Art Unit: 2672


A method according to claim 1 wherein the photosensitive coated substrate comprises a photosensitive printing plate or drum. See claim 1 rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Javid A. Amini whose telephone number is 571-272-7654. The examiner can normally be reached on 8-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 571-272-7664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


JEFFERY BRIER
PRIMARY EXAMINER

Javid A Amini
Examiner
Art Unit 2672

Javid Amini

Application/Control Number: 09/882,138

Page 14

Art Unit: 2672